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UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF LOUISIANA

LAKE CHARLES DIVISION

BROOKSHIRE BROTHERS : **DOCKET NO. 04-1150**
HOLDING, INC., ET AL

VS. : **JUDGE TRIMBLE**

TOTAL CONTAINMENT, INC, ET AL : **MAGISTRATE JUDGE WILSON**

MEMORANDUM RULING AND ORDER

Before the Court is a “Motion in Limine Concerning Dr. Broutman and Testing Report and Analysis of Dr. Patrick Cassidy and Dr. Donald Paul” (doc. #1036) wherein the movers seek to exclude the opinions of these experts retained by defendant, Shell, LP. Shell, the supplier of Carilon which is the inner layer of the flexpipe, hired Drs. Paul, Cassidy and Broutman to perform failure analyses on the failed hose and render opinions as to why the TCI primary gasoline (flexpipe) leaked, or “failed.” Brookshire Brothers’ experts maintain that the Carilon inner liner of the flexpipe becomes embrittled while in use causing cracks which is partially responsible for leaks in the flexpipe. Shell’s experts have determined that the hose failure are primarily caused by hydrolysis (or degradation) of the hose’s ester-based polyurethane layers.¹

Brookshire Brothers complains that the conditions under which Shell’s experts conducted the tests and analysis do not match the operating conditions in service and would only mislead or confuse the trier of fact. Brookshire Brothers complains about the cyclic pressure fatigue experiments and the finite element analysis (“FEA”) of the predicted stresses and strains of the

¹ These are the middle layers in the hose; Shell alleges that when they are not intact, the hose’s structural support system is severely damaged.

flexpipe.

Brookshire Brothers specifically complains that (1) Dr. Broutman performed his analysis with an internal pressure of 50 psi when Pump Master, Inc. personnel testified that the operating pressure was 35 psi, and (2) one pipe was tested with no outer layers attached and the pipe ends being free, whereas in actual operating conditions, both ends were fixed by couplings and the outside layers were either fully or partially attached while in operation.

Brookshire Brothers argues that Shell's experts have failed to recreate the incident event because their testing and analyses is not substantially similar to the operations at the Brookshire Brothers' stations. Shell argues that this attack on its experts goes to the weight of the testimony and does not satisfy the standard to exclude expert opinions. We agree.

Federal Rule of Evidence 702 requires that the Court ensure that the expert's testimony is based on a reliable scientific foundation. *Daubert* lists five considerations to assist the trial judge in determining "reliability" of the expert's testimony: (1) the "testability of the expert's theory or technique; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence and maintenance of standards and controls; and (5) whether the methodology is generally accepted in the scientific community.²

Shell argues that it properly used a "scientific method" in its failure analysis by developing a hypothesis regarding the cause of failure, and then tested that hypothesis against properly designed scientific observations, experiments and calculations.³ Shell's fundamental hypothesis was that the

² *Daubert*, 509 U.S. at 591-95.

³ See *Oddi v. Ford Motor Co.*, 234 F.3d 136, 156 & 159 (3rd Cir. 2002); *Pride v. BIC Corp.*, 218 F.3d 566, 571 & 578 (6th Cir. 2000).

hose fails as a result of cyclic pressure fatigue following loss of the structural support of the hose. Shell asserts that Dr. Cassidy's cyclic pressure test and Dr. Broutman's FEA work are scientifically designed experiments and analyses that directly test the validity of that hypothesis and that these experiments and calculations provide direct scientifically rigorous support for the validity of the underlying failure mechanism proposed by Shells' experts.

First, Shell asserts that its testing was not a "re-enactment" of the Brookshire Brothers' gas station operating conditions, but was a side-by-side comparison test designed to demonstrate the critical importance of the integrity of the polyester fiber and ester-based polyurethane matrix to the performance of the hose. Shell suggests that it would be impossible to "re-enact" the flexpipe failures because they occurred over many years (most in excess of 7 years). Dr. Cassidy declares in his deposition that the type of testing performed (accelerated fatigue test) is commonly used and accepted in the scientific community for the assessment of hose or pipe potentially subject to cyclic pressure changes.⁴ Shell submits that Dr. Cassidy purposefully chose test conditions that were reasonable. Dr. Cassidy chose the 50 psi upper boundary for the pressure cycles because this was within the design operating pressure of the flexpipe. The hose ends were permitted to be free to move as opposed to being fixed in order to permit the measurement of elongation and an assessment of the strain on the hose under pressure. Furthermore, cyclic fatigue testing methodologies published by ASTM do not fix the hose ends during testing.⁵ Shell submits that it is well-documented that even though the hose ends are fixed, the hose sections all elongate in service permitting the hose to have substantial freedom to move in between the two fixed piping points.

⁴ Shell's Exhibit D, ¶ 3.

⁵ *Id.* at ¶ 6 and 12.

The complaints about the substance of Dr. Broutman's FEA are similar to those lodged against Dr. Cassidy's cyclic fatigue study. Dr. Broutman relied on Drs. Cassidy and Paul's conclusions regarding the loss of structural support in setting up his FEA comparison. Shell asserts that Dr. Broutman sought in part to confirm that the computer model matched the experimental physical observations. Dr. Broutman testified that the computer results could be "scaled" to determine actual stresses and strains at different pressures.⁶ Dr. Paul performed similar calculations associated with both the pressure and bending-induced stresses on the unsupported hose. Thus, one can use the physical observations combined with the various mathematical models to "scale" the results to particular operating conditions.

After considering the arguments of the parties, the Court concludes that Brookshire Brothers' motion in limine lacks merit.

ORDER

Based on the foregoing,

IT IS ORDERED that the motion in limine to exclude the testing report and analysis of Drs. Broutman, Cassidy and Paul (doc. #1036) is hereby **DENIED**.

THUS DONE AND SIGNED in Chambers at Lake Charles, Louisiana, this 5th day of September, 2007.



JAMES T. TRIMBLE, JR.
UNITED STATES DISTRICT JUDGE

⁶ Shell's exhibit G, Broutman Depo. pp. 31-35; Shell's exhibit H, Paul Depo. pp. 202-211.